ULTRA HD

Extender for HDMI w/POL

GBT-HDBT-POL

User Manual

Release A7

Gefen TOOLBOX®

Important Safety Information

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this product near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install or place this product near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. To reduce the risk of electric shock and/or damage to this product, never handle or touch this unit or power cord if your hands are wet or damp. Do not expose this product to rain or moisture.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Batteries that may be included with this product and/or accessories should never be exposed to open flame or excessive heat. Always dispose of used batteries according to the instructions.

Warranty Information

Gefen warrants the equipment it manufactures to be free from defects in material and workmanship.

If equipment fails because of such defects and Gefen is notified within two (2) years from the date of shipment, Gefen will, at its option, repair or replace the equipment, provided that the equipment has not been subjected to mechanical, electrical, or other abuse or modifications. Equipment that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for ninety (90) days from the day of reshipment to the Buyer.

This warranty is in lieu of all other warranties expressed or implied, including without limitation, any implied warranty or merchantability or fitness for any particular purpose, all of which are expressly disclaimed.

1. Proof of sale may be required in order to claim warranty.

2. Customers outside the US are responsible for shipping charges to and from Gefen.

3. Copper cables are limited to a 30 day warranty and cables must be in their original condition.

The information in this manual has been carefully checked and is believed to be accurate. However, Gefen assumes no responsibility for any inaccuracies that may be contained in this manual. In no event will Gefen be liable for direct, indirect, special, incidental, or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages. The technical information contained herein regarding the features and specifications is subject to change without notice.

For the latest warranty coverage information, refer to the Warranty and Return Policy under the Support section of the Gefen Web site at www.gefen.com.

PRODUCT REGISTRATION

Please register your product online by visiting the Register Product page under the Support section of the Gefen Web site.

Contacting Gefen Technical Support

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Technical Support Hours: 8:00 AM - 5:00 PM Monday - Friday, Pacific Time

Extender for HDMI w/ POL is a trademark of Gefen, LLC.

Important Notice

Gefen, LLC reserves the right to make changes in the hardware, packaging, and any accompanying documentation without prior written notice.

HDMI, the HDMI logo, and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing in the United States and other countries.

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Operating Notes

- CAT-5e cables should not exceed 198 feet (60 meters) and CAT-6 cables should not exceed 230 feet (70 meters).

- Shielded (STP) CAT-5e or CAT-6 is recommended. However, unshielded (UTP) CAT-5 or CAT-6 is acceptable, depending on cable quality, but is not the top choice. Care should always be given to keep these cables away from power lines and other electromagnetic interference sources.

> **NOTE:** Shielded cable has an advantage by providing immunity to Electromagnetic Interference (EMI) from cell phones and A/C motors.

- This product is Ultra HD 4K x 2K compliant. 4K x 2K resolutions can be extended up to 130 feet (40 meters) over a CAT-5e or CAT-6 cable.

- POL (Power Over Line) technology from Gefen sends power to the Receiver unit over the same CAT-5e / CAT-6 cable that is used for extending the HDMI signal.

- HDBaseT® technology allows HDMI, IR (Bi-directional), and power to be sent over one CAT-5e / CAT-6 cable.

Features and Packing List

Features

- Extends HDMI at 1080p Full HD and Bi-Directional IR up to 230 feet (70 meters) over a single CAT-6 cable, or up to 198 feet (60 meters) over CAT-5e
- Extends 4K Ultra HD (3840 x 2160 @ 30 Hz) and Bi-Directional IR up to 130 feet (40 meters) over a single CAT-5e or CAT-6 cable
- Supported HDMI features
  - ► HDCP-compliant
  - ► 12-bit Deep Color
  - ► LPCM 7.1 audio, Dolby® TrueHD, and DTS-HD Master Audio™ pass-through
  - ► 3DTV pass-through
  - ► CEC pass-through
  - ► Lip Sync pass-through
- IR extension from Sender to Receiver and from Receiver to Sender
- Gefen POL feature provides power to the Receiver unit over the link cable
- Uses Gefen's implementation of HDBaseT® technology
- EDID pass-through
- Locking power connector
- Surface mountable

Packing List

The *Extender for HDMI w/ POL* ships with the items listed below. If any of these items are not present in your box when you first open it, immediately contact your dealer or Gefen.

- 1 x Extender for HDMI w/POL - Sender unit
- 1 x Extender for HDMI w/POL - Receiver unit
- 1 x 6 ft. Locking HDMI cable (M-M)
- 1 x IR emitter
- 1 x IR extender
- 1 x 24V DC Locking Power Supply
- 1 x Quick Start Guide

NOTE: The Extender for HDMI w/ POL ships with one IR emitter. However, depending upon the application, a secondary IR emitter may need to be purchased. See IR Control for more information on using IR control.

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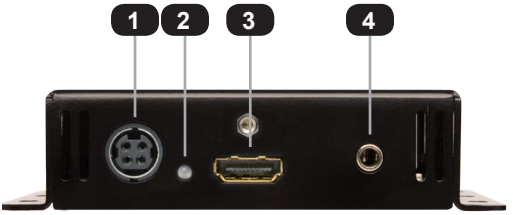
Sender Unit Layout

Front

ID	Name	Description
1	IR Out	Connect the included single infrared IR emitter from this jack to the IR sensor window of the source.
2	Link	Connect a CAT-5e / CAT-6 cable from this port to the Receiver unit.

Back



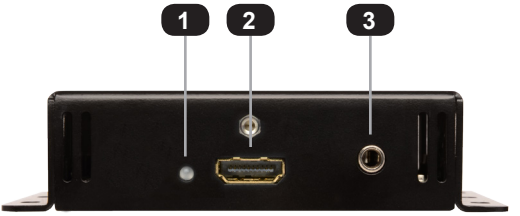
ID	Name	Description
1	24V DC	Connect the included 24V DC power supply to this connector and plug the AC power cord into an available electrical outlet. Only use the power supply shipped with this unit.
2	Power	This LED will turn on once the included 24V DC power supply has been connected. See Power LED Indicator for more information on using the LED indicator.
3	HDMI	Connect an Ultra HD source to this port using the included locking HDMI cable.
4	IR In	Connect a mini-mono 3.5mm cable from this jack to the output of an automation system w/ electrical IR output.

Receiver Unit Layout

Front

ID	Name	Description
1	IR Out	Connect an IR emitter (Gefen part no. EXT-IREMIT) from this jack to the IR sensor window of the source.
2	Link	Connect a CAT-5e / CAT-6 cable from this port to the Sender unit.

Back



ID	Name	Description
1	Power	This LED will turn on once the included 24V DC power supply has been connected to the Sender unit and a CAT-5e / CAT-6 cable is connected between the Sender and Receiver unit. See Power LED Indicator for more information on using the LED indicator.
2	HDMI	Connect an Ultra HD display to this port using an HDMI cable.
3	IR Ext	Connect the included IR extender to this jack.

Installation

Connecting the Extender for HDMI w/ POL

1. Connect the included HDMI cable between the Ultra HD source and the **HDMI** port on the Sender unit.

2. Connect an Ultra HD display to the **HDMI** port on the Receiver unit using another HDMI cable.

3. Connect a CAT-6 cable from the **Link** jack on the Sender unit to the **Link** jack on the Receiver unit:

   ► Ultra HD 4K x 2K up to 170 feet (52 meters) using CAT-6; up to 130 feet (40 meters) using CAT-5e.

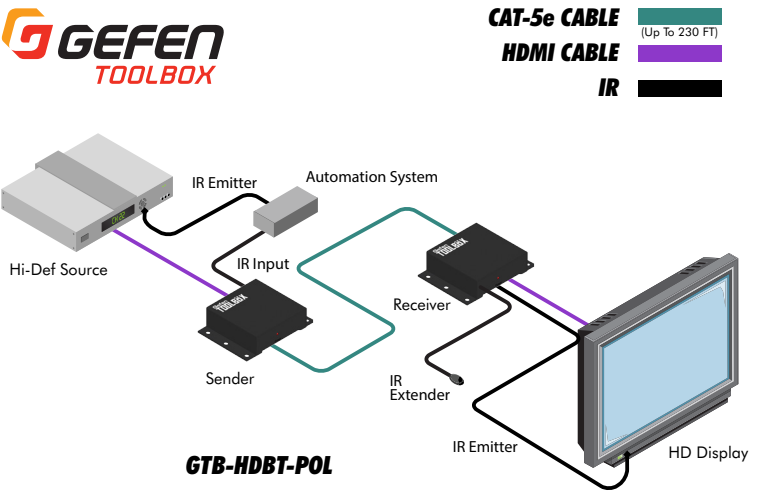
   ► HDMI and 3DTV up to 230 feet (70 meters) using CAT-6; up to 198 feet (60 meters) using CAT-5e.

> **NOTE:** If terminating network cables in the field, please adhere to the TIA/EIA568B specification. See Network Cable Diagram for details.

4. Connect the included 24V DC power supply to the Sender unit and plug the AC power cord into an available electrical outlet. Power to the Receiver unit is delivered from the Sender unit over the CAT-5e/CAT-6 cable using Gefen POL technology.

5. For information on using IR control, see IR Control.

Sample Wiring Diagram



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02 Operating the Extender for HDMI w/ POL

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Power LED Indicator

The Power LED indicator on the Sender and Receiver unit provides basic information on the current status of the Extender for HDMI w/ POL.

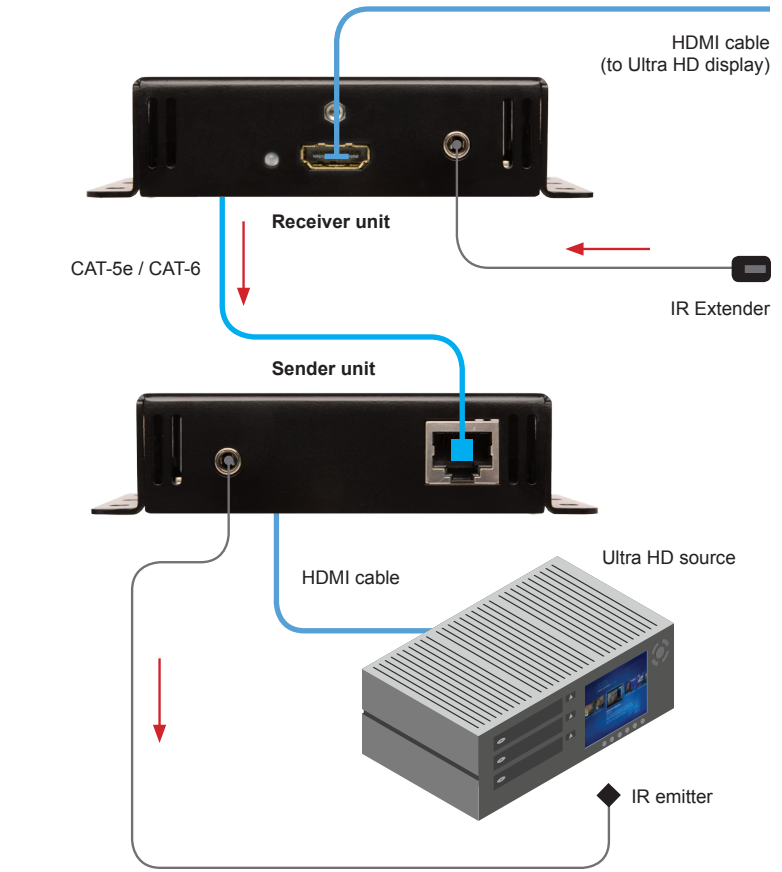
LED	Status	Description
Power	Solid blue	• Power connected to Sender unit.
	Off	• No power supplied to the Sender or Receiver unit. • Make sure the power supply is connected to the Sender unit. • Make sure that the outlet is “live”. • If the Sender unit LED is illuminated and Receiver unit LED is off, inspect the CAT-5e / CAT-6 cable between the Sender and Receiver unit.
	Flashing blue and amber	• Non-HDCP content is being transmitted from the source device.

IR Control

The Bi-Directional IR feature allows two methods of control: Use the included IR extender to control the source device from the viewing location or an automation system to control the display (or other sink device) from the source location. Refer to the user documentation that came with your automation system for details.

Controlling the Source from the Display Location

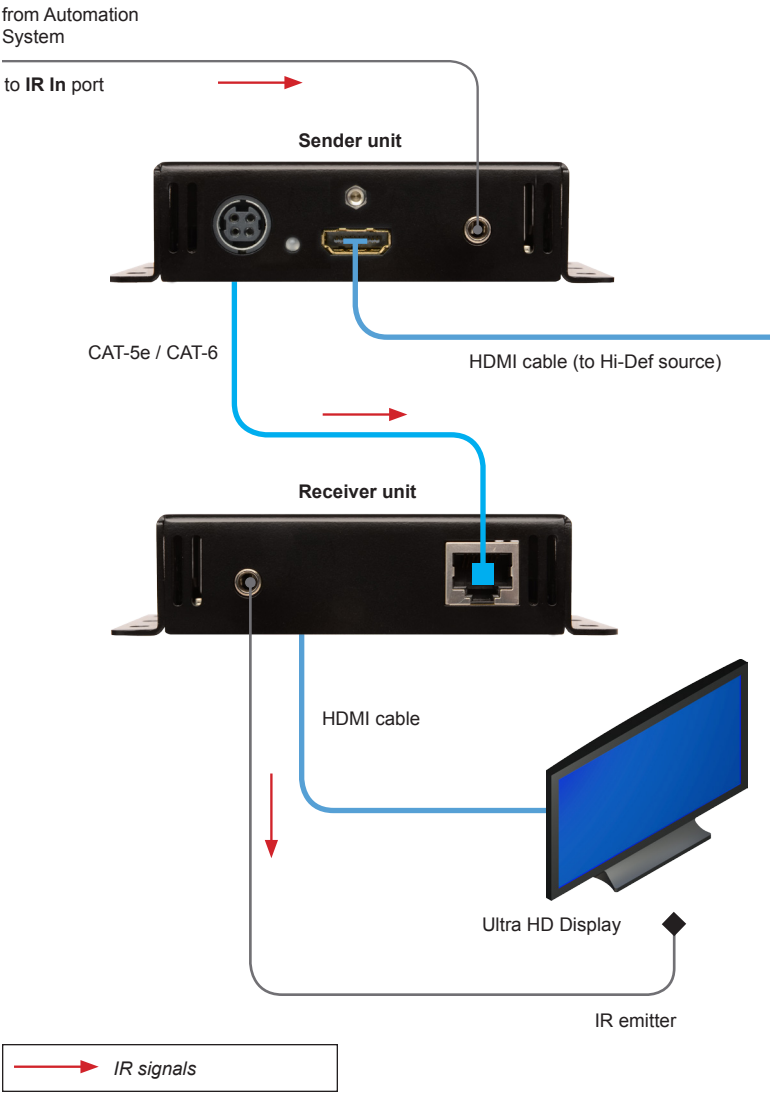
1. Connect the included IR extender to the **IR Ext** jack on the Receiver unit.
2. Connect the included IR emitter from the **IR Out** jack on the Sender unit to the IR sensor on the source device.



Controlling the Display from the Source Location

1. Connect the 3.5mm mini-mono connector from the **IR In** port on the Sender unit to the automation system.

2. Connect the included IR emitter from the **IR Out** jack on the Receiver unit to the IR sensor on the display.



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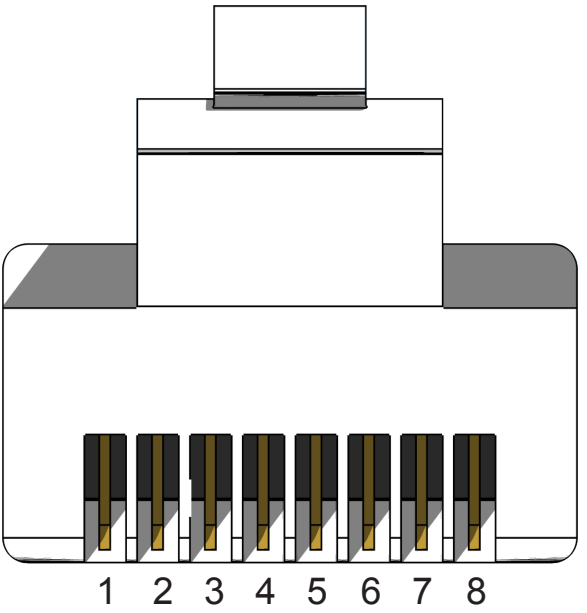
Network Cable Diagram

Front of RJ-45 Connector



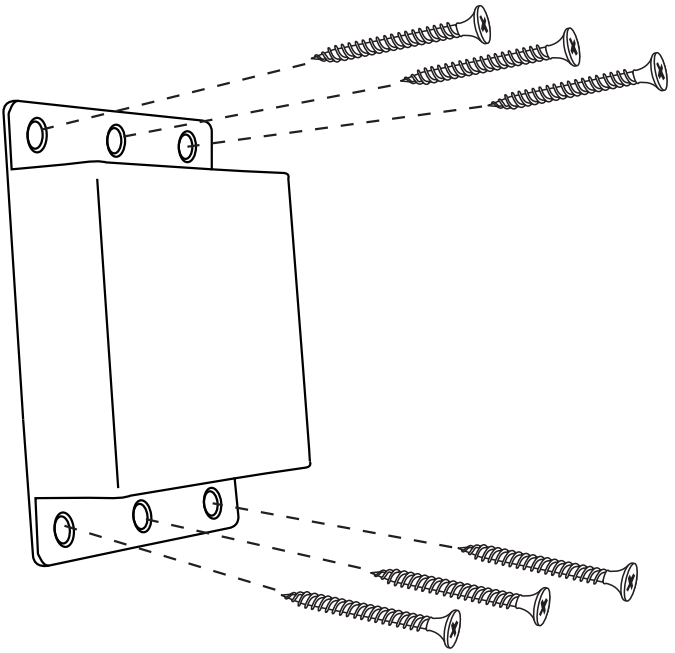
Gefen recommends the TIA/EIA-568-B wiring option. Use the table below when field-terminating cable for use with Gefen products.

Pin	Color	Description
1	Orange / White	TD+ (Transmit Data, positive differential signal)
2	Orange	TD- (Transmit Data, negative differential signal)
3	Green / White	RD+ (Receive Data, positive differential signal)
4	Blue	Unused
5	Blue / White	Unused
6	Green	RD- (Receive Data, negative differential signal)
7	Brown / White	Unused
8	Brown / White	Unused

Shielded (STP) CAT-5 or CAT-6 is recommended. However, unshielded (UTP) CAT-5 or CAT-6 is acceptable. CAT-5, CAT-5e, and CAT-6 cabling comes in stranded and solid core types. Gefen recommends using solid core cabling. CAT-6 cable is also recommended.

It is recommended to use one continuous run from one end to the other. Patch cable is not recommended.

Wall Mounting Instructions



The GefenToolbox Extender for HDMI w/POL should be mounted vertically on a wall or inside / outside a cabinet with wood / drywall screws as shown in the diagram above. There should be an inch or two of clearance between the edges of the unit and any walls or vertical surfaces to allow for enough clearance for connection and disconnection of the HDMI cable.

For installation on a drywall surface, use a #6 drywall screw. When installing, it is recommended to use the center hole on a stud.

Specifications

Supported Formats	
Video	• 1080p Full HD • 4K x 2K (Ultra HD)
Audio	• 7.1-channel LPCM • Dolby® TrueHD • DTS-HD Master Audio™

Electrical	
Maximum Pixel Clock	• 300 MHz
Maximum TMDS Clock	• 300 MHz
Power / HDCP Indicator	• 1 x LED, multicolor (blue / amber)

Connectors	
Video Input	• 1 x HDMI Type-A 19-pin, female, locking
Video Output	• 1 x HDMI Type-A 19-pin, female, locking
Link (Sender / Receiver)	• 1 x RJ-45, shielded
IR Extender (Receiver)	• 1 x 3.5mm mini-stereo
IR Out (Sender / Receiver)	• 1 x 3.5mm mini-mono
IR In (Sender)	• 1 x 3.5mm mini-mono

Operational	
Power Consumption	• 24W (max.)

Physical	
Dimensions (W x H x D)	• 4.3” x 1” x 3.2” (110mm x 26mm x 80mm)
Unit Weight (Sender / Receiver)	• 0.33 lbs (0.15 kg)

Stretch it. Switch it. Split it. Gefen's got it. ®

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This product uses UL listed or CE compliant power supplies.